CLAIMS

1. A method for transferring data on a network from a data source to an end station executing a multi-layer network protocol, including a network layer and at least one higher layer, through a network interface on the end station, comprising:

receiving in the network interface a packet which carries a data payload from a block of data in the data source, and a control field identifying the packet;

determining based on the control field in the network interface whether the packet matches a flow specification, and if so transferring the data payload in the packet directly to a target buffer assigned by a process at a layer higher than the network layer.

2. The method of claim 1, wherein the control field in the packet includes a packet header.

Sub a 3. The method of claim 1, wherein the network protocol comprises TCP/IP and the packet control field comprises a TCP/IP header.

4. The method of claim 1, including prior to receiving the packet, allocating the target buffer for the plurality of packets, and notifying the network interface of the allocated target buffer.

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5. The method of claim 1, the network interface is coupled to a network medium supporting a maximum packet size, and including transmitting a request from an application for transfer of a block of data from the data source, the block of data having a length potentially greater than the maximum packet size for the medium.

6. The method of claim 5, including notifying the network interface in response to the request of a flow specification for the block of data according to the multi-layer network protocol, and wherein the step of receiving the packet includes identifying packet using the flow specification.

7. The method of claim 6, wherein the network protocol comprises TCP/IP, and the flow specification includes a sequence number of a first byte from the plurality of packets to be stored in the target buffer.

8. The method of claim 1, wherein the flow specification includes a sequence number for the block of data.

9. The method of claim 8, wherein the flow specification includes IP source and destination addresses and TCP port numbers.

Sub A10. A method for transferring data on a network from a data source to an end station executing a multi-layer network protocol through a network interface on the end station, including medium access control layer processes, comprising:

establishing a connection with a destination for a session according to the network protocol;

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transmitting a request for transfer of a block of data from the data source, and providing a flow specification and an identifier of a target buffer to the network interface;

receiving in the network interface a plurality of packets which carry respective data payloads, packets in the plurality of packets including control fields identifying whether the packet falls within the flow specification of the block of data,

upon receiving a packet, determining in the network interface whether the packet falls within the flow specification, and if so transferring the data payload to the target buffer.

11. The method of claim 10, wherein the control field in the first packet includes a packet header.

12. The method of claim 10, wherein the network protocol comprises TCP/IP, and the packet control data comprises a TCP/IP header.

13. The method of claim 10, wherein the network protocol comprises TCP/IP, and the flow specification includes a sequence number of a first byte from the plurality of packets to be stored in the target buffer.

14. The method of claim 10, wherein the flow specification includes a sequence number for the block of data.

15. The method of claim 14, wherein the flow specification includes IP source and destination addresses and TCP port numbers.

16. A method for transferring data on a network from a data source to an end station executing a TCP/IP network protocol through a network interface on the end station including medium access control layer processes below TCP/IP, comprising:

establishing a connection with a destination for a session according to the TCP/IP network protocol;

transmitting a request from the application, for transfer of a block of data from the data source, and providing a flow specification for the block of data and an identifier of a target buffer to the network interface;

receiving in the network interface a plurality of packets which carry respective data payloads from the block of data in the data source, and each packet in the plurality of packets including a TCP/IP header,

upon receiving each packet, determining in the network interface

whether the packet falls within the flow specification, and if so

transferring the data payload to the target buffer.

17. The method of claim 16, wherein the flow specification includes a sequence number for bytes of data in the block of data.

18. The method of claim 17, wherein the flow specification includes IP source and destination addresses and TCP port numbers.

19. The method of claim 16, wherein the target buffer comprises a buffer assigned at the TCP layer or higher.

20. The method of claim 16, wherein the target buffer comprises a buffer assigned at a layer higher than the TCP layer.